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October 3, 2011

VIA E-MAIL

Ms. Deanna Keysor
Kaye Scholer L.L.P.
3 First National Plaza
70 West Madison Street – Suite 4100
Chicago, IL 60602-4231

Re: *Edge Capture L.L.C. and Edge Specialists, L.L.C. v. Barclays Bank PLC, et al.*
United States District Court, Northern District of Illinois, Eastern Division
Case No. 1:09-cv-01521
Our File No. 124313.0002

Dear Deanna:

I write regarding Wolverine's duty to disclose technical information regarding the system that engaged in the five trades cited in the Amended Complaint.

Flow chart and network diagram for the system

Edge continues to have concerns about the Wolverine Defendants preparing a flow chart and network diagram in the midst of litigation for reasons we previously stated. Nonetheless, pursuant to Magistrate Judge Denlow's direction at the September 27, 2011 Status Hearing, Edge has elected to have the Wolverine Defendants produce a flow chart and network diagram as part of their initial disclosures.

As you know, the Court ordered that the Wolverine Defendants are to "give [Edge] what they want[,]" August 9 Transcript at 31, and further provided Edge "an incentive to narrow what [Edge is] looking for and go for what [Edge] really feel they need[,]" *id.* at 33. In accordance with the Court's directive, we are providing you with specific guidance as to what Edge "wants" and is "looking for" in the flow chart and network diagram. There are **three (3)** categories of information that Edge expects the flow chart and network diagram to disclose of the system that engaged in the five trades cited in the Amended Complaint.

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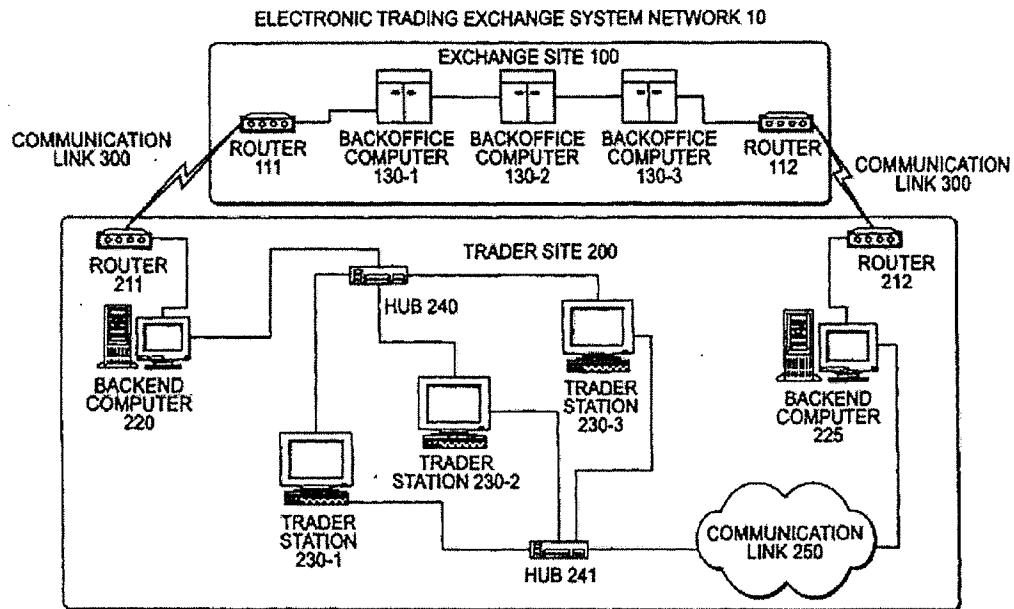
A. Category One – Physical Components of the System

The first category of information that Edge expects disclosed in any chart/diagram prepared by Wolverine is a depiction of the layout of the physical components (at a computer, router, or server level) of the system that were involved in or connected to each of the five trades cited in the Amended Complaint. The chart/diagram should include the following:

- (1) the physical components (at a computer, router, or server level) that received the bid and ask prices and quantities submitted by Edge to the CBOE;
- (2) the physical components (at a computer, router, or server level) that processed the information received from the CBOE;
- (3) the physical components (at a computer, router, or server level) that received price and quantity information for the security underlying each of the option contracts that were the subjects of the five trades cited in the Amended Complaint;
- (4) the physical components (at a computer, router, or server level) that calculated, looked-up, or stored values or prices for the option contracts that were the subjects of the five trades cited in the Amended Complaint;
- (5) the physical components (at a computer, router, or server level) that made the decisions to submit orders or quotes in response to the bid and ask prices submitted by Edge to the CBOE;
- (6) the physical components (at a computer, router, or server level) that generated orders or quotes to be submitted in response to the bid and ask prices submitted by Edge to the CBOE;
- (7) the physical components (at a computer, router, or server level) that performed any safety checks or verifications of the decisions to submit orders or quotes in response to the bid and ask prices submitted by Edge to the CBOE;
- (8) the physical components (at a computer, router, or server level) that were involved in the transmission of the orders or quotes submitted in response to the bid and ask prices submitted by Edge to the CBOE;
- (9) the physical components (at a computer, router, or server level) that performed any hedging in response to or in connection with the five trades cited in the Amended Complaint; and
- (10) the physical components (at a computer, router, or server level) where human traders monitored the activities of the physical components involved in or connected to the five trades cited in the Amended Complaint.

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This first category seeks a depiction of the physical components in the system at a high level, like that of Figure 1 of the '629 patent, which is offered for exemplary purposes only:



In addition to describing the physical location of the above physical components of the system, the chart/diagram should show how those physical components are connected to each other. The network diagram should also provide a high-level explanation of the role each physical component had with respect to the five transactions cited in the Amended Complaint. Note that the chart/diagram should not include physical components that were not involved in or connected with the five transactions cited in the Amended Complaint.

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B. Category Two – Functional Components of the System

The second category of information that Edge expects to see depicted is the relevant functional components of the system. Figure 3 of the '629 patent provides an example of the type of illustration and information we are seeking in this category:

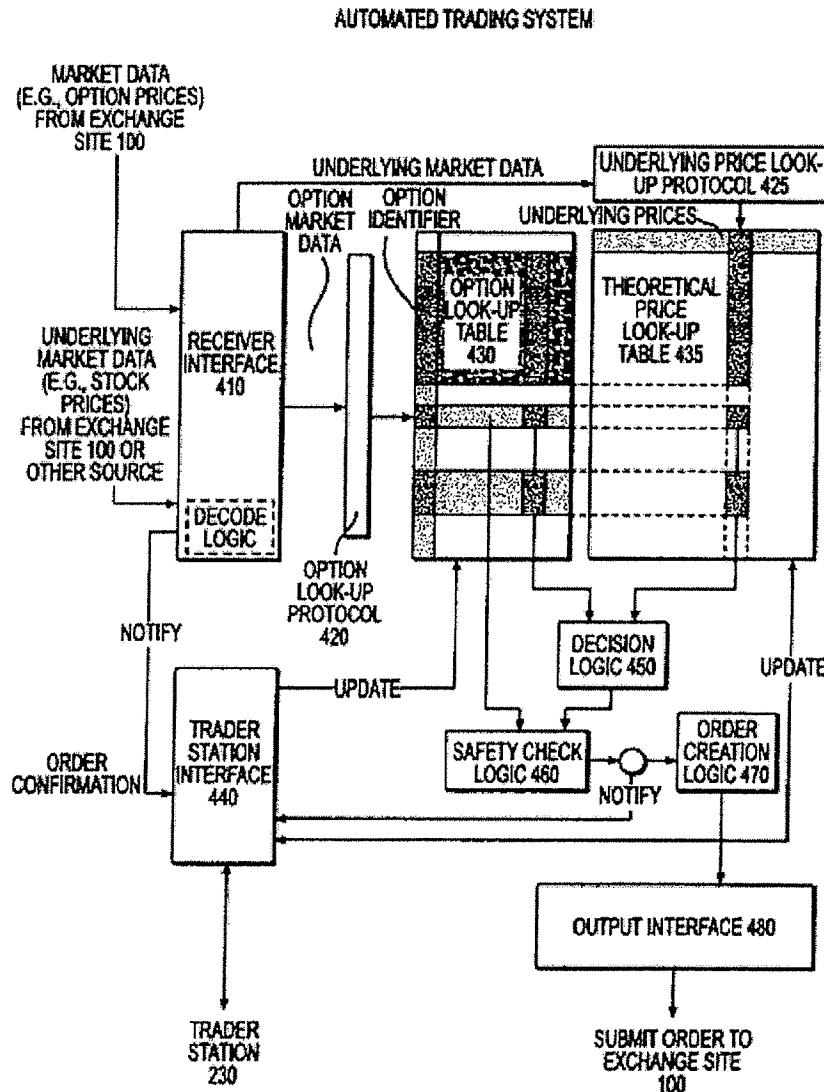


FIG. 3

For each functional component depicted, also identify the physical component(s) depicted in Category One where the functional component is found. Note again that the chart/diagram

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should not include functional components that were not involved in or connected with the five transactions cited in the Amended Complaint.

C. Category Three – Order and Timing of Steps

The third category of information that Edge expects to see depicted is the order and timing of the steps that the system took in connection with each of the five trades cited in the Amended Complaint. Figure 6 of the '629 patent provides an example of the type of illustration and information we are seeking in this category:

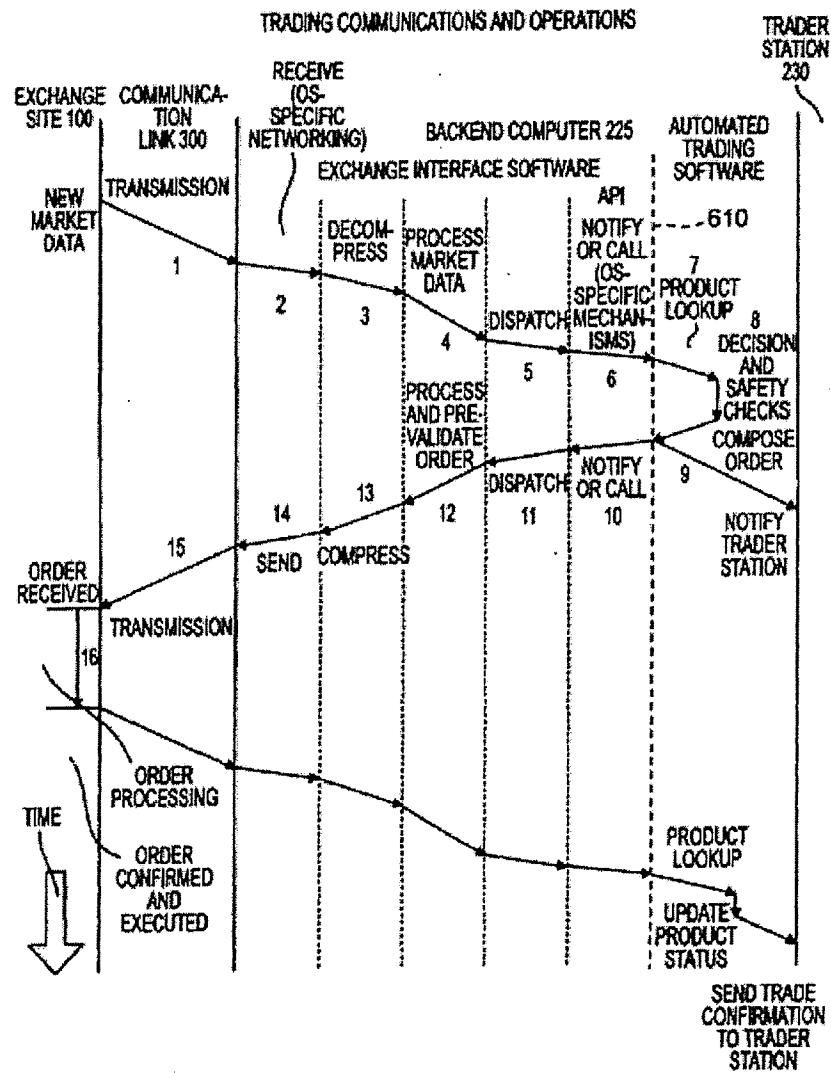


FIG. 6

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This third category of information should also disclose the time it takes for the system to perform each step followed to conduct the five trades cited in the Amended Complaint, as well as which of the physical component(s) depicted in Category One performed that step. Note that the chart/diagram should not include steps that were not taken to conduct the five transactions cited in the Amended Complaint.

Cost Associated with Creating The Chart/Diagram

We want to be closely involved with monitoring the cost associated with the production of the chart/diagram, especially considering that Edge will be paying a share of the cost to Wolverine (in line with Magistrate Judge Denlow's order) for the time its employees spend on the creation of the chart/diagram. Accordingly, please provide us with the names of all of the persons who will be involved with creating the chart/diagram, their titles (including attorneys) and anticipated roles in the creation of the chart/diagram, as well as their billing rates for the project.

We also want Wolverine to provide us with detailed progress reports, which includes any adjusted estimates and detailed explanations for the adjusted estimates, on a regular basis. Wolverine should provide us with a progress report at each \$10k mark, beginning at the \$25k mark. We further request that Wolverine send us a detailed and itemized time and expense report with each progress report, as well as at the completion of the project.

30(b)(6) Deposition

Let us know when you would like to discuss the scheduling of the 30(b)(6) deposition on the topics attached as Exhibit A. (These are the same topics that were attached to my letter of September 6.) As we have explained to you previously, the deposition topics have been carefully drafted to obtain the relevant technical information that we seek at a mid- to high-level. They are specific and detailed but they are not overbroad. The topics relate to trading activity connected to the five trades and to the system(s) that engaged in those trades.

As soon as we have an agreement on the date and location of the deposition, we will formally serve Wolverine with a 30(b)(6) deposition notice. You already have our topics so you are in a position to begin preparing Wolverine's corporate designees for the deposition.

Dr. Nelken

We will want to share the chart/diagram with Dr. Nelken and bring him to the deposition of Wolverine. Please confirm that we may do so. Note that we will not address source code or the specifics of Wolverine's pricing algorithms during the deposition.

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Sincerely,

ROBINS, KAPLAN, MILLER & CIRESI L.L.P.



Sang Young Brodie

EXHIBIT A

WOLVERINE - DEPOSITION TOPICS FOR INITIAL DISCLOSURES

TOPIC NO. 1: The identification of each system that performed one or more trades cited in the Amended Complaint, including but not limited to:

- a. the system name, model number or other relevant identifiers;
- b. the identity of the software (including version) used by the system(s) on January 27, 2009 to conduct the trades cited in the Amended Complaint; and
- c. the operating system (including version) used by the system(s) on January 27, 2009 to conduct the trades cited in the Amended Complaint.

TOPIC NO. 2: A general description the main computing and storage components of the system(s) identified in Topic No. 1—e.g., computers, servers, workstations—in terms of their hardware configuration (i.e., technical specifications), location, functionality, and network interfaces or connections.

TOPIC NO. 3: A general description of how the systems identified in Topic No. 1 receive information from and send information to the CBOE, or receive information about the underlying security from other data sources (e.g., exchanges other than the CBOE), including a general description of the network that connects the system(s) to the CBOE and a general description of the path(s) transmissions (to and from the CBOE) follow through the network.

TOPIC NO. 4: For the following Trade—

Table 1

Trade Series (Options Contract)	Trade ID	Trade Price	Approximate Trade Time (Central)	Trade Qty
OEX OEW FEB09 340.00 P P/S: 07/10	87336:212757 3315	\$2.75	09:41:13	1

—high- and mid-level facts relating to how your system engaged in the Trade [this topic is not directed to the details of models, equations, calculations, algorithms, or software routines used], including:

- (1) how the system received information about the Options Contract, including the Ask Price (the Ask Price is identical to the Trade Price in Table 1) and quantity for the Trade, after such information was submitted by the account associated with acronym GRF and disseminated by the CBOE electronic exchange, including the identification of the physical components(s) of the system and of the software application(s) or platform(s) that interface with the CBOE

electronic exchange or with the equipment that provides said information to your system;

- (2) how the system received price and quantity information for the security underlying the Options Contract, and the source of that information;
- (3) the steps the system took to distribute all or some of the information in (1) and (2) through the system, such as storing said information for later use, inputting all or some of said information into data structure(s) (such as look up tables or linked lists), or passing all or some of said information to certain software applications or platforms in the system;
- (4) the steps the system took, if any, to calculate a value related to the implied volatility for the Ask Price of the Options Contract [this subtopic is not directed to the details of the models, equations, calculations, algorithms, or software routines used];
- (5) the steps the system took to search for or look up (a) a price for the Options Contract that is based on a model or equation used by the system or (b) a value related to the implied volatility of the Options Contract other than the value identified in (4), including the use of search protocols, databases, or tables [this subtopic is not directed to the details of the algorithms or software routines used];
- (6) the steps the system took to calculate (a) a price for the Options Contract that is based on a model or equation used by the system or (b) a value related to the implied volatility of the Options Contract other than the value identified in (4), including the use of computational algorithms, interpolation and/or extrapolation [this subtopic is not directed to the details of the models, equations, calculations, algorithms, or software routines used];
- (7) the steps the system took to determine whether any of the information received from the exchange, including the Ask Price, fell within a range acceptable to the system to submit an order or quote to buy the Options Contract at that Ask Price, including:
 - a. any comparison of the Ask Price or the value related to the implied volatility of the Ask Price (as calculated in (4)) with the price or the value related to the implied volatility that the system derived for the Options Contract (as described in (5) and (6));

- b. any other steps the system took to make a decision to buy the Options Contract at the Ask Price [this subtopic is not directed to the details of the models, equations, calculations, algorithms, or software routines used];
- (8) the steps the system took to confirm, if any, the decision made by the system to buy the Options Contract at the Ask Price, such as: checks on the price and quantity of the Options Contract, checks on trade limits for the Options Contract, checks on the total Delta, and checks on the price and quantity of the underlying security for the Options Contract;
- (9) the steps the system took to compose an order or quote for transmission to the CBOE exchange to buy the Options Contract at the Ask Price, including:
 - a. the steps the system took to create the order or quote [this subtopic is not directed to the details of the algorithms or software routines used];
 - b. the steps the system took to interface with the CBOE electronic exchange and transmit the order or quote to the CBOE electronic exchange [this subtopic is not directed to the details of the algorithms or software routines used];
- (10) the steps the system took to receive confirmation of the Trade from the CBOE electronic exchange and record information about the Trade [this subtopic is not directed to the details of the algorithms or software routines used]; and
- (11) the steps the system took, if any, to hedge risk associated with the Trade [this subtopic is not directed to the details of the models, equations, calculations, algorithms, or software routines used].

TOPIC NO. 5: The identification and location of the physical component(s) of the system and software application(s) and platform(s) that performed the steps described in Topic No. 4.

TOPIC NO. 6: The speed and known latencies (in milliseconds and microseconds) at which the system performed the steps covered by Topic No. 4, from the time the system received information about the Options Contract identified in Topic No. 4 to the time the system transmitted an order or quote to the CBOE electronic exchange to buy the Options Contract. This topic further covers any time stamping or time logging that your system performed in connection with the Trade identified in Topic No. 4.

TOPIC NO. 7: General facts relating to how your trader(s) monitored the trading activity covered by Topic No. 4, including the use of computers, how those computers are connected to or within the system, and the location of where the monitoring took place.

TOPIC NO. 8: The topics covered by Topic Nos. 4-7 but as they apply to each of the Trades in Tables 2 - 4:

Table 2

Series (Options Contract)	Trade ID	Trade Price	Approximate Trade Time (Central)	Trade Qty
AWI AWI FEB09 15:00 P P/S: 04/01	87336:210759 4410	\$0.25	10:07:23	1

Table 3

Series (Options Contract)	Trade ID	Trade Price	Approximate Trade Time (Central)	Trade Qty
CBY CBY FEB09 35.00 C P/S: 04/01	87336:210759 5031	\$0.60	10:13:43	1

Table 4

Series (Options Contract)	Trade ID	Trade Price	Approximate Trade Time (Central)	Trade Qty
CBY CBY MAR09 40.00 C P/S: 04/01	87336:210759 5589	\$0.25	10:18:39	1

TOPIC NO. 9: For the following Trade—

Table 5

Series (Options Contract)	Trade ID	Trade Price	Approximate Trade Time (Central)	Trade Qty
CEC CEC FEB09 30.00 C P/S: 04/01	87336:210759 4747	\$0.65	10:09:13	1

—high- and mid-level facts relating to how your system engaged in the Trade [this topic is not directed to the details of models, equations, calculations, algorithms, or software routines used], including:

- (1) how the system received information about the Options Contract, including the Bid Price (the Bid Price is identical to the Trade Price in Table 5) and quantity for the Trade, after such information was submitted by the account associated with acronym GRF and disseminated by the CBOE electronic exchange, including the identification of the physical components(s) of the system and of the software application(s) or platform(s) that interface with the CBOE electronic exchange or with the equipment that provides said information to your system;

- (2) how the system received price and quantity information for the security underlying the Options Contract, and the source of that information;
- (3) the steps the system took to distribute all or some of the information in (1) and (2) through the system, such as storing said information for later use, inputting all or some of said information into data structure(s) (such as look up tables or linked lists), or passing all or some of said information to certain software applications or platforms in the system;
- (4) the steps the system took, if any, to calculate a value related to the implied volatility for the Bid Price of the Options Contract [this subtopic is not directed to the details of the models, equations, calculations, algorithms, or software routines used];
- (5) the steps the system took to search for or look up (a) a price for the Options Contract that is based on a model or equation used by the system or (b) a value related to the implied volatility of the Options Contract other than the value identified in (4), including the use of search protocols, databases, or tables [this subtopic is not directed to the details of the algorithms or software routines used];
- (6) the steps the system took to calculate (a) a price for the Options Contract that is based on a model or equation used by the system or (b) a value related to the implied volatility of the Options Contract other than the value identified in (4), including the use of computational algorithms, interpolation and/or extrapolation [this subtopic is not directed to the details of the models, equations, calculations, algorithms, or software routines used];
- (7) the steps the system took to determine whether any of the information received from the exchange, including the Bid Price, fell within a range acceptable to the system to submit an order or quote to sell the Options Contract at that Bid Price, including:
 - a. any comparison of the Bid Price or the value related to the implied volatility of the Bid Price (as calculated in (4)) with the price or the value related to the implied volatility that the system derived for the Options Contract (as described in (5) and (6));
 - b. any other steps the system took to make a decision to sell the Options Contract at the Bid Price [this subtopic is not directed to the details of the models, equations, calculations, algorithms, or software routines used];

- (8) the steps the system took to confirm, if any, the decision made by the system to sell the Options Contract at the Bid Price, such as: checks on the price and quantity of the Options Contract, checks on trade limits for the Options Contract, checks on the total Delta, and checks on the price and quantity of the underlying security for the Options Contract;
- (9) the steps the system took to compose an order or quote for transmission to the CBOE exchange to sell the Options Contract at the Bid Price, including:
 - a. the steps the system took to create the order or quote [this subtopic is not directed to the details of the algorithms or software routines used];
 - b. the steps the system took to interface with the CBOE electronic exchange and transmit the order or quote to the CBOE electronic exchange [this subtopic is not directed to the details of the algorithms or software routines used];
- (10) the steps the system took to receive confirmation of the Trade from the CBOE electronic exchange and record information about the Trade [this subtopic is not directed to the details of the algorithms or software routines used]; and
- (11) the steps the system took, if any, to hedge risk associated with the Trade [this subtopic is not directed to the details of the models, equations, calculations, algorithms, or software routines used].

TOPIC NO. 10: The identification and location of the physical component(s) of the system and software application(s) and platform(s) that performed the steps described in Topic No. 9.

TOPIC NO. 11: The speed and known latencies (in milliseconds and microseconds) at which the system performed the steps covered by Topic No. 9, from the time the system received information about the Options Contract identified in Topic No. 9 to the time the system transmitted an order or quote to the CBOE electronic exchange to sell the Options Contract. This topic further covers any time stamping or time logging that your system performed in connection with the Trade identified in Topic No. 9.

TOPIC NO. 12: General facts relating to how your trader(s) monitored the trading activity covered by Topic No. 9, including the use of computers, how those computers are connected to or within the system, and the location of where the monitoring took place.

Larson, Michael J.

From: Brodie, Sang Young
Sent: Monday, October 03, 2011 4:05 PM
To: Unikel, Robert; Keysor, Deanna; Marek, Michelle
Cc: Meghjee, Munir R.
Subject: Edge v. Barclays et al. - Wolverine Initial Disclosures
Attachments: keysorltr0.PDF

Counsel,

Please see the attached letter.

Regards,

~ Sang Young

Sang Young Brodie
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